SonTek SL1500-3G and SL3000-3G Cell Locations
(Firmware v3.0 versus previous versions)

On June 6, 2018, SonTek released firmware v3.0. Among many improvements and bug fixes, one aspect that was changed was the cell location placement. It was discovered that pre-v3.0 cell locations were reported incorrectly by the software/firmware – namely, they were too close to the system by 1 cell length. It is important to note that the fix in the cell locations does not affect the actual physical location of the acoustic pulses; it only pertains to how the firmware and software report where those locations are.

Note that this change affects only the Multi-cell data. When you use software v3.0 to open older data, you may notice that the Multi-cell data have automatically shifted locations, while the Integrated Velocity Cell (IVC) data have not shifted. This is because the IVC is a user setting that can be changed after data collection, whereas the Multi-cell setup cannot be changed after data collection. It may be necessary to manually check and change the IVC settings of files whose multi-cell locations have been adjusted by the new software version (details below).

There are two possible scenarios that you may encounter when opening older data files. These are (1) loading original (unmodified) data files and (2) loading files that have been recalculated using the "Recalculate Flow" function.
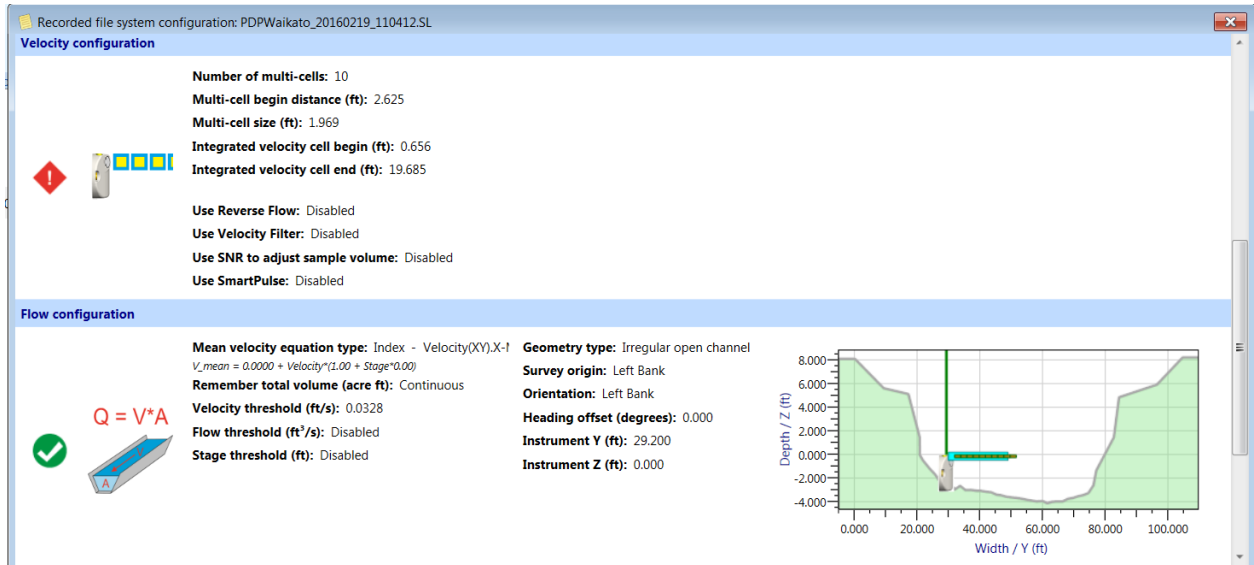
Older files that have not been modified via the Recalculate Flow function will load as normal in software v3.0. However, if you right click on the file to open the system configuration view you may see a warning indicator next to the Velocity Configuration section and a shift in the cell locations in the Flow Configuration section.
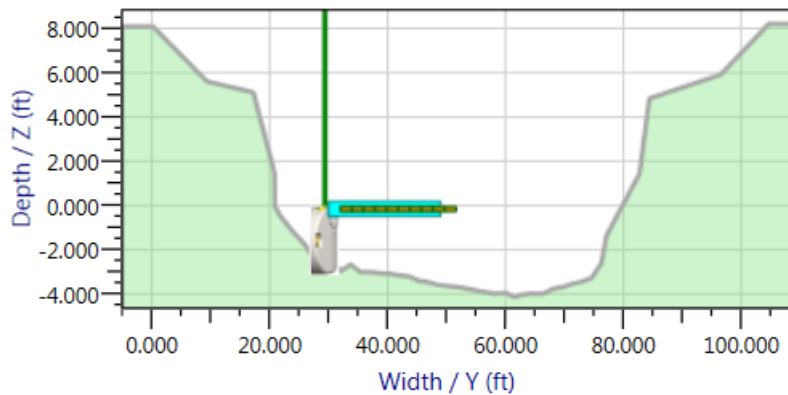
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Zooming in on the Flow configuration chart, you can see the shift in the Multi-cell locations below.

You can leave this file as is or you can correct the location of the IVC using the "Recalculate Flow" function. To correct the IVC location, click the "Recalculate Flow" button and navigate to the Flow configuration window. The "Integrated velocity cell begin" setting will be highlighted in red to indicate an error. Adjust this setting so that the IVC begin location is equal to or greater than the "Multi-cell begin" setting.

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If you click ok before correcting the error, the following warning will be displayed.
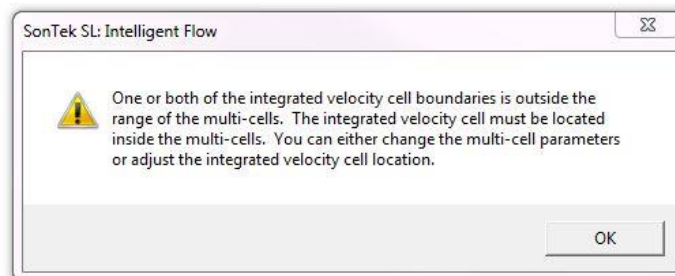
Once the IVC begin setting is corrected (shown below), click the OK button to close the window and continue with the recalculation process. After recalculating, the data will be displayed in the view data window as normal.

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The second scenario you may encounter when opening older data files is a file that does not load correctly. Files that were previously "Recalculated" with the "Recalculate Flow" function in software versions prior to v3.0 may display an error when loading. If the IVC boundaries are not within the Multi-cell range an error is displayed in the file selection window. The error message can be viewed by scrolling this window to the right.

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The full error message is "Error Recalculating file. The integrated velocity cell beginning is outside of the Multi-cell range". In these cases, you can use the "Recalculate Flow" function to correct the error and view the data file as discussed above in the first scenario.

Another item affected by the changes in v3.0 and later is the minimum sampling range specification for the SL1500-3G and SL3000-3G instruments. The revised sampling range values are presented below:

	SL3000	SL1500
Sampling Range	0.14 to 5.0m (0.46 to 16 ft)	0.36 to 20m (1.2 to 66 ft)
Minimum Channel Width	0.5m (1.6 ft)	1.0m (3.3 ft)

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Below are how you will see the cell locations displayed in post- and pre-v3.0 firmware.

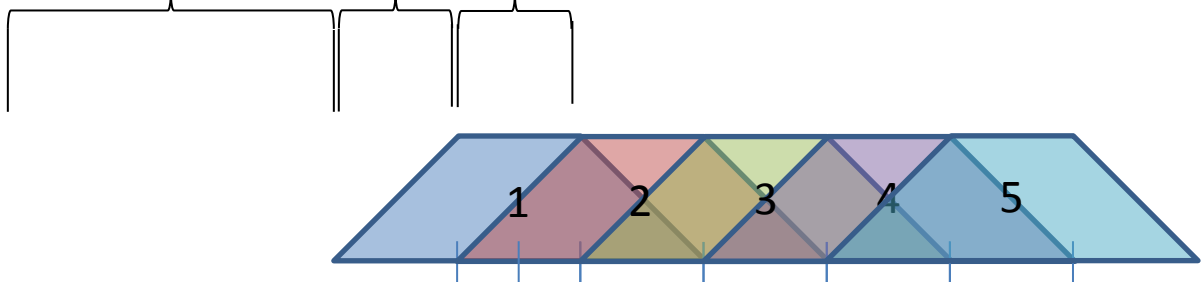## V3.0 and beyond:

Blanking distance   Cell size   Cell size

1   2   3   4   5
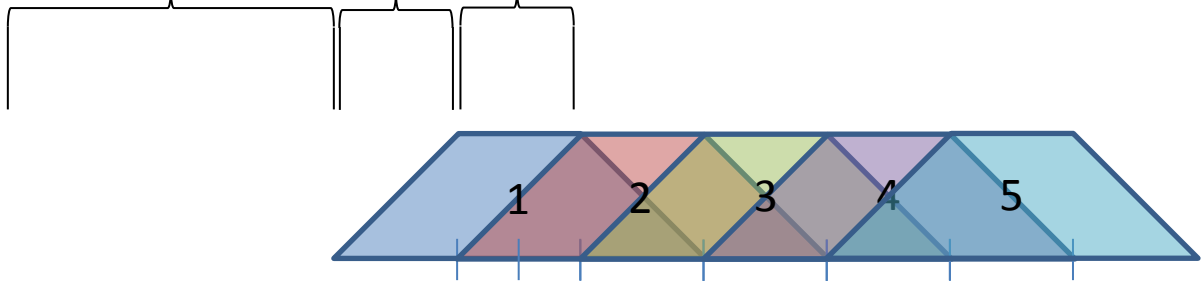
Start of 1st Cell = Blanking Distance + Cell Size

Start of 2nd Cell = Blanking Distance + 2*Cell Size = End of 1st Cell

Pre-V3.0 (incorrect):

Blanking distance   Cell size   Cell size

1   2   3   4   5

Start of 1st Cell = Blanking Distance

Start of 2nd Cell = Blanking Distance + Cell Size = End of 1st Cell